

**SEMICONDUCTOR STRUCTURE FOR PROVIDING STRAINED CRYSTALLINE  
LAYER ON INSULATOR AND METHOD FOR FABRICATING SAME**

**ABSTRACT**

A semiconductor structure having a high-strained crystalline layer with a low crystal defect density and a method for fabricating such a semiconductor structure are disclosed. The structure includes a substrate having a first material comprising germanium or a Group(III)-Group(V)-semiconductor or alloy thereof. In addition, a crystalline epitaxial first layer, comprising a graded buffer layer and a substantially relaxed layer, is provided. The buffer layer is sufficiently relaxed to provide relaxation of the substantially relaxed layer deposited thereon. A further layer may be provided on the first layer, and the transfer of at least the further layer is facilitated by providing a weakened zone in the first layer.